CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application.

1. (currently amended) A method of manufacturing powder comprising:

~~providing a~~ preparing a mixture of one or more metal-containing ~~precursor~~ precursors and carrier particles to create a slurry precursor;

feeding the ~~metal-containing~~ slurry precursor to a reaction zone of a high temperature reactor thereby creating a vapor of the ~~metal-containing~~ slurry precursor;

adding a reactive fluid to the ~~metal-containing~~ slurry precursor in the reaction zone thereby creating a stream ~~comprising~~ of vaporized ~~metal-containing~~ slurry precursor and reactive fluid~~, wherein the metal-containing precursor is selected from the group consisting of metal acetates, metal carboxylates, metal nitrates, metal sulfates, and metal hydroxides~~;

processing the stream at high temperature;

cooling the ~~vapor to form a vapor~~ stream ~~comprising~~ to nucleate the slurry precursor thereby creating nucleated nanoscale powders; and

quenching the ~~vapor~~ stream of ~~comprising~~ nucleated nanoscale powders thereby preventing agglomeration and grain growth~~, and~~;

wherein the powder manufactured ~~comprises~~ is a nano-dispersed ~~nanopowders~~ nanopowder ~~comprising~~ of carrier particles ~~of at least one first composition~~ and ~~attached~~ metal-containing precursor particles ~~of at least one second composition~~ that are dispersed on and attached to the surface of the carrier particles~~, wherein the attached particles differ from the carrier particles, wherein the ratio of the average size of the carrier particles to the average size of the attached particles is greater than or equal to 2~~.

2. (withdrawn) The method of claim 1, wherein the metal-containing precursor is selected from the group comprising an emulsion, fluid, particle-containing liquid slurry, a gas, a solid, a single-phase liquid, a multi-phase liquid, a melt and a fluid mixture.

3. (cancelled)

4. (currently amended) The method of claim 1, wherein the metal-containing precursor ~~is a mixture of~~ comprises multiple metal-containing precursors.

5. (withdrawn) The method of claim 1, wherein the nanoscale powder comprises a metal.

6. (original) The method of claim 1, wherein the reactive fluid comprises oxygen.

7. (withdrawn) The method of claim 1, wherein the reactive fluid comprises carbon.

8. (withdrawn) The method of claim 1, wherein the reactive fluid comprises nitrogen.

9. (withdrawn) The method of claim 1, wherein the reactive fluid comprises boron.

10. (withdrawn) The method of claim 1, wherein the reactive fluid comprises hydrogen.

11. (currently amended) The method of claim 1, wherein [the] feeding the metal-containing precursor to the reaction zone comprises spraying that enhances heat transfer efficiency, mass transfer efficiency, momentum transfer efficiency, and reaction efficiency.

12. (original) The method of claim 1, wherein the reaction zone is surrounded by a concentric zone to reduce non-uniformities in heat, mass or momentum transfer.

13. (currently amended) The method of claim 1, wherein [the] processing is achieved using one or more ~~of the~~ techniques selected from the group consisting of plasma processes, internal energy, heat of reaction, conduction, convection, radiation, inductive, microwave, electromagnetic, direct electric arc, pulsed electric arc, laser and nuclear.

14. (currently amended) The method of claim 1, wherein ~~the reacted metal-containing precursor is product of~~ processing is carried out by combustion.

15. (currently amended) The method of claim [14] 1, wherein ~~the combustion~~ processing is performed at a temperature greater than ~~600° C~~ 1500° C.

16. (cancelled)

17. (previously presented) The method of claim 32, wherein the harvesting is accomplished using one or more techniques from the group consisting of bag filtration, electrostatic separation, membrane filtration, cyclones, impact filtration, centrifugation, hydrocyclones, thermophoresis, magnetic separation, impingement filters, screen filters, fabric filters and scrubbers.

18. (original) The method of claim 1, wherein the quenching is accomplished using adiabatic expansion.

19. (cancelled)

20. (withdrawn) The method of claim 1, wherein the process operates near ambient pressure.

21. (withdrawn) The method of claim 1, wherein the process operates at a pressure less than 750 mm Hg absolute.

22. (withdrawn) The method of claim 21, wherein the pressure is achieved using a compressed fluid-based eductor operating on a venturi principle.

23. (withdrawn) A method of producing nanoscale particles in vacuum wherein the vacuum is achieved using a compressed fluid-based eductor operating on a venturi principle.

24. (cancelled)

25. (withdrawn) The method of claim 1, wherein the metal-containing precursor comprises nanoscale powder and coarse carrier particles.

26. (withdrawn) The method of claim 1, wherein the powder manufactured comprises carrier particles comprising a ceramic and attached particles comprising metal.

27. (original) The method of claim 1, wherein the powder manufactured comprises carrier particles comprising a ceramic and attached particles comprising an alloy.

28. (withdrawn) The method of claim 1, wherein the powder manufactured comprises carrier particles comprising a ceramic and attached particles comprising an oxide.

29. (withdrawn) The method of claim 1, wherein the powder manufactured comprises carrier particles comprising a ceramic and attached particles comprising a ceramic.

30. (withdrawn) A powder manufactured using the method of claim 1.

31. (previously presented) The method of claim 1, wherein the one or more metal-containing ~~precursor~~ precursors is a metal carboxylate.

32. (previously presented) The method of claim 1, further comprising harvesting the nucleated nanoscale powders.

33. (new) The method of claim 1, wherein the one or more metal-containing precursors is selected from the group consisting of metal acetates, metal carboxylates, metal nitrates, metal sulfates, and metal hydroxides.

34. (new) The method of claim 1, wherein the carrier particles are selected from particles comprising simple oxides, multi-metal oxides, doped oxides, carbides, nitrides, borides, complex ceramics, and non-stoichiometric ceramics.

35. (new) The method of claim 1, wherein the ratio of the average size of the carrier particles to the average size of the attached particles is greater than or equal to 2.